

Remarks/Arguments after Final

This is in response to the Office Action of Oct. 16, 2003, in which Claim 8 is allowed and Claims 1-7 are under final rejection. Independent Claims 1 and 8 are amended herewith to more clearly state the invention and advance the prosecution, either for allowance or to place the application in better condition for appeal. New method claims 9 and 10, depending from allowed method claim 8, are submitted herewith as “method counterparts” to apparatus claims 3 and 6 respectively. Entry of this amendment is respectfully requested.

Claim 1 has been amended to indicate a) in the preamble, that the objective of the claim is to provide a keep-warm system to provide freeze protection for a fuel cell power plant, and b) in the concluding portion of the claim, that the recited combination of structure is “thereby to prevent freezing of water in freeze-sensitive parts of the fuel cell power plant”. This is intended to distinguish the character and functioning of the recited structure from any such structure that does not specifically “prevent freezing of water in a fuel cell power plant”.

The allowed independent method Claim 8 has been amended to clarify the scope of the invention. This has been done by deleting specific recitation of a cooler in the fuel cell stack assembly (CSA) of that broadest method claim. It should be evident that the patentability of that claim resides not in whether or not the CSA has a cooler, but rather, in that the power plant has a water management system that is operatively connected to the CSA and that the method and objective of the invention is to prevent freezing of water in freeze-sensitive parts of the fuel cell power plant during shutdown. While it is appropriate to recite the CSA as having an anode, a cathode, and electrolyte, and further that the CSA is operatively connected to a water management system, not every CSA with which the invention of Claim 8 is applicable necessarily includes a specific channel designated a “cooler”. Thus, it is deemed appropriate to omit such recitation from the structure of Claim 8. On the other hand, that structure has been retained in the recitation of the CSA of Claim 1.

Believing the modest modification of Claim 8 described above to be acceptable, Applicants have submitted for entry, two additional dependent method claims that depend from Claim 8 and which are method counterparts to apparatus claims 3 and 6 respectively.

It is respectfully submitted that the amendments to Claims 1 and 8 do not require an additional search and further serve to clarify the character and scope of the invention, and accordingly, should be entered.

Referring to the rejections of Claims 1-7, the Examiner has repeated the rejections verbatim from the first Office Action. Accordingly, Applicants wish to repeat, through incorporation by reference, the arguments and distinguishing comments submitted with their Response dated May 20, 2003. As clearly recited by Claim 1 as now amended, the invention has as its claimed purpose the prevention of freezing of water in freeze-sensitive parts of the fuel cell power plant. This is accomplished via the novel arrangement and functioning of elements as recited in Claim 1. Briefly and simply stated, there is provided a CSA, a fuel supply, a source of oxidant reactant, a water management system, and importantly, a thermal insulating enclosure for one or more of the CSA and the water management system, and a catalytic burner. The burner catalytically reacts fuel and oxidant to provide heat, and is disposed such that the heat is provided into the thermal insulating enclosure. The dependent claims 2-7 recite the character of the catalytic burner, the combustion reaction process and temperature, the use of air and pressurized hydrogen as the reactants for the burner, and that both the CSA, which is a PEM, and the water management system are within the thermal insulating enclosure. This arrangement affords a fuel and energy-efficient means for keeping the critical elements from freezing for long intervals of 7 days or more under external freezing conditions.

Neither the Acker, the Gebhardt, et al, nor the Tomomura references in any way teach the use of a catalytic burner and a thermal insulating means for providing a keep-warm system to prevent freezing of water-sensitive parts of the fuel cell power plant. Since clearly no single one of the applied references provides all of the claimed structure, the Examiner relies upon a combination of references in making the

rejections. Yet, to make such combination, there must be a teaching or suggestion of doing so and then, the resultant structure must meet all of the elements and their functional interactions and results as recited in the Claims. That simply does not occur with respect to the applied references.

The Examiner, in his Response contained in the Office Action of Oct. 16, again relies mainly on an assertion that the fuel cell system of Acker “resides outside of an airspace (e. g., a house) and is connected to an air circulation path with an interior region of the air space via a cathode inlet conduit and a cathode outlet conduit.” Applicants will acknowledge that that is what Acker discloses, however the Examiner’s comments go on to say “the system is analogous to a residential heat pump unit, which has a casing to prevent the components for (sic) direct exposure to the ambient” and “(T)hus, the casing of the fuel cell system is considered as a thermal insulating means, which encloses the fuel cell stack and the cooling subsystem”.

In actuality, nowhere does the Acker reference show, mention, disclose or suggest “thermal insulating means enclosing at least one of the CSA and the water management system for providing thermal insulation thereof”. Indeed, nowhere does it suggest any kind of thermal insulating enclosure. The so-called “casing” (14) of Fig. 2 of Acker is simply a 3-dimensional block diagram said to actually be the “fuel cell system”, which includes the fuel cell stack 50. It is from this that the Examiner develops the strained hypothesis that a.) Acker must be showing some sort of enclosure (why?), and b.) that the fuel cell system of Acker is purportedly analogous to a heat pump, which has a casing, and further, c.) that heat pump casings are to protect heat pump elements from the ambient, and still further d.) that thus the imagined casing of the fuel cell system of Acker is considered as a thermal insulating means enclosing a fuel cell stack and cooling system.

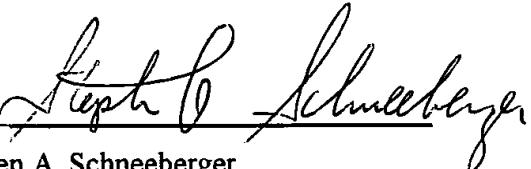
Firstly, the Examiner’s reasoning is based on suppositions that simply are not supported by the actual prior art under consideration. Secondly, even if one were to accept that Acker somehow discloses a “casing”, which Applicants vigorously challenge, there simply is not adequate support for the assertion that such a casing is thermally insulating and is for the purpose, in combination with a catalytic fuel

burner, of preventing freezing of freeze-sensitive parts of the fuel cell power plant, as is now clearly recited in Claim 1.

For the forgoing reasons, it is respectfully submitted that the references fail to fairly or reasonably suggest the claimed invention, particularly in view of Claim 1 as amended herewith to reflect the freeze protection capability. Accordingly, entry of the amendment to place the application in better condition either for allowance or appeal is respectfully requested, and favorable reconsideration is respectfully solicited. If any issue(s) remains, or arises, that might be resolved by telephone, it is respectfully requested that Applicant's attorney be contacted at telephone: (860) 313-4402.

Respectfully submitted,

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